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PRESENT STATE, PRACTICAL VALUE, AND PROSPECTS
 OF VACCINATION AGAINST TYPHOID AND PARATYPHOID

The following is a Yugoslav summary of a paper given by Prof Dr N. Cernozubov of Belgrade at the FPRY Medical Congress, held in Belgrade, 6 - 10 October 1948.

The speaker gives a brief history of active immunization against typhoid and paratyphoid, stressing the fact that the original vaccination and principle of immunization proposed by Kolle and Pfeifer in 1892 remained unchanged for over half a century. There is no doubt that vaccination played an important part in eradicating typhoid and paratyphoid epidemics in World War I, this being a unique case in the history of war diseases. From this originated the traditional optimism in assessing the usefulness of antityphoid vaccination which is especially deeply rooted in the army medical services of almost all countries.

However, soon after the end of World War I articles appeared criticizing existing methods of preparing vaccine and the results of vaccination. In France, Italy, the USA, and African colonies, complaints arose concerning the relatively high morbidity rate of typhus in army units i.e., in just that very part of the population which is regularly and rigorously inoculated and revaccinated. This was in agreement with the peacetime experience of the former Yugoslav Army.

Mass inoculation of the civilian population, which was carried out in Yugoslavia between the two world wars, especially in regions where typhoid is endemic, failed to produce any appreciable reduction in the morbidity rate. It was agreed that subcutaneous inoculation with Kolle-Pfeifer vaccine has many undesirable aspects. The fairly severe local and general reactions, the impossibility of accurately placing contraindications in all cases, the danger of activating evolutionary tubercular processes, the provocation of typhoid attacks in latent cases, the need for repeated injections, etc. -- all can be ascribed to the passive, traditional method of vaccination against typhoid and paratyphoid. The author discussed this problem in domestic and foreign publications as early as 1935 and, with the object of improving vaccines and methods of inoculation, stated a number of requirements which are still pertinent today:

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1. Special attention should be paid to the selection of stock strains for the production of vaccine and the problem of the correct dosage;
2. Close collaboration between production plants and epidemiologists;
3. Testing the protective use of vaccine should be organized on an experimental as well as on a practical epidemiological basis.

At that time intensive experimental work began abroad on the study of the immunogenic potential of TAB (triple) vaccine on the basis of an analysis of individual antigen components and their biochemical nature. Felix and Pitt discovered Vi antigen and confirmed its significance in producing active immunity against typhoid and in this way established principles for the selection of stock strains with a view to the production of effective vaccines. During the years just preceding World War II, our own production of TAB vaccine was placed on a scientific-experimental basis. After the war, the old routine practice returned and strict control of the culture and selection of stock strains for the production of vaccine was restored only this year.

Due to the intensive research in the USSR and the USA on the study of the immunogenic properties of typhoid bacillus and the vaccines made from it, the Allied armies in World War II were inoculated with more efficacious vaccines than in World War I. Soviet immunology went even further. It attempted during the war to realize the ideal principle in immunization practice and extensively used the method of a single vaccination against cholera, typhoid, paratyphoid, dysentery and tetanus, using the so-called "depo" vaccine prepared from O-antigen-producing bacterial cells which were absorbed by calcium phosphate, then mixed with tetanus anatoxin (NIISI /Scientific Research and Experimental Medical Institute (of the Red Army) vaccine). This vaccine was also tried in Yugoslavia on a large number of human cases during the last phase of the People's War for Liberation. In the USSR a special commission was formed which is making a detailed study of this principle of immunization.

The task of Yugoslav production plants and scientific research laboratories is to overcome this country's backwardness in the problem of modern methods of preparing and controlling TAB vaccine, thus dispelling the unjustified pessimism which has recently taken hold among certain practitioners regarding the efficacy of antityphoid immunization. This is at the same time the prerequisite for the legal introduction of compulsory inoculation against typhoid and paratyphoid which the present epidemiological situation in our state so urgently requires.

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